

1. An apparatus comprising;

an input path for receiving a modulated photonic signal containing first information embodied therein, and having a center frequency and first sideband frequencies associated therewith;

5 a photonic filter comprising a frequency-selective filter operably connected to the input path, configured to receive and photonicly substantially suppress the first sideband frequencies from the modulated photonic signal, to provide an output comprising the center frequency embodying the first information therein; and

10 a photonic control signal path operably connected to the frequency-selective filter and configured to provide a photonic control signal for selecting frequencies to be separated.

2. The apparatus of claim 1, further comprising a first output path, operably connected to a destination for receiving the first information.

15 3. The apparatus of claim 1, wherein the photonic filter further comprises a photonic transistor.

4. The apparatus of claim 1, wherein the photonic filter is configured to retain the first information in the center frequency from the input path to the output.

20 5. The apparatus of claim 1, wherein the photonic control signal is at least partially correlated relative to a frequency to be separated.

6. The apparatus of claim 1, wherein the photonic control signal is a continuous wave signal.

7. The apparatus of claim 1, wherein the photonic control signal is configured to
5 separate the center frequency from the first sideband frequencies.

8. The apparatus of claim 1, wherein the frequency separated corresponds to the center frequency.

9. The apparatus of claim 1, further comprising a second output path, and wherein
10 suppressing further comprises directing energy from the first sideband frequencies to the second output path.

10. The apparatus of claim 1, wherein the frequency separated is at least one of the
15 frequencies corresponding to the first sideband.

11. The apparatus of claim 1, further comprising:

a telecommunications path configured to deliver a filtered photonic signal, received from the frequency-selective filter, to a receiver; and

the receiver, including a nonlinear device, configured to create, from the center frequency embodied in the filtered photonic signal, reconstituted sidebands corresponding to the first sideband frequencies and for outputting the center frequency and reconstituted sidebands.

12. The apparatus of claim 11, wherein the nonlinear device is selected from the group consisting of an opto-electronic device, and a nonlinear optical element.

13. The apparatus of claim 12, wherein the opto-electronic device is a photo-detector.

14. The apparatus of claim 12, wherein the nonlinear device further comprises a substantially linear electronic device for providing a linear output, and a non-linear electronic element operably connected thereto and configured to receive the linear output and create the first sidebands therefrom.

15. An apparatus comprising;

an input path for receiving a modulated photonic signal, having a center frequency and first sideband frequencies;

a photonic filter comprising a frequency-selective filter operably connected to the input path, configured to receive and photonicallly separate the center frequency from the first sideband frequencies in the modulated photonic signal; and

a photonic control signal path operably connected to the frequency-selective filter and configured to provide a photonic control signal configured to be at least partially correlated relative to the center frequency.

16. The apparatus of claim 15, wherein the photonic filter further comprises a photonic transistor.

17. The apparatus of claim 16, wherein the photonic control signal is at least partially correlated relative to a frequency to be separated.

18. The apparatus of claim 17, wherein the photonic control signal comprises a continuous wave signal.

19. The apparatus of claim 18, further comprising:

a telecommunications path configured to deliver a filtered photonic signal, received from the frequency-selective filter, to a receiver;

the receiver, including a nonlinear photonic signal detector, configured to create, from the center frequency embodied in the filtered photonic signal, reconstituted sidebands corresponding to the first sideband frequencies and for outputting the center frequency and reconstituted sidebands.

20. The apparatus of claim 19, wherein the frequency-selective filter is further configured to selectively attenuate the sidebands with respect to the carrier frequency.

21. The apparatus of claim 15, wherein the frequency-selective filter comprises a photonic drop filter.